Title: **Efficiency of Fishing Vessels Affected by a Marine Protected Area - The Case of Small-Scale Trawlers and Marine Protected Area in Nha Trang Bay, Vietnam**

Author(s): Quach Thi Khanh Ngoc, Ola Flaaten, Kim Anh Nguyen Thi

Abstract: Are Marine Protected Areas positive for adjacent fisheries? This is a study of the technical efficiency of small-scale trawlers in Nha Trang, Vietnam following establishment of Nha Trang Bay Marine Protected Area (NTB-MPA) that imposed a trawl ban to protect marine biodiversity and regenerate fish stocks. Data were collected through a survey of small-scale trawler owners. Using a stochastic frontier analysis, this study demonstrates that engine power, household size and operating characteristics of vessels strongly affect technical efficiency. The number of days at sea is the most important factor affecting the output revenue. Understanding these relationships is an essential condition for effective management. Despite the ban on trawling, the vessels operating in the vicinity of the MPA are still more technically efficient than those operating in an alternative unprotected area. Thus the alternative grounds still sustained the activity of the trawl fleet affected by the ban. However, survey data from the NTB-MPA project reveals a decrease in fish stocks in this area. These findings combined provide some policy implications. A marine protected area and a trawl ban do not seem to be sufficient for improved management. It is essential to deal also with the link between poverty and resource management. Alternative income generation and effective education to achieve compliance from local communities are among the important measures for the success of a marine protected area.